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[54] NEURAL NETWORK BASED CONTACT STATE ESTIMATOR

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[*] Notice: This patent is subject to a terminal disclaimer.

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[52] **U.S. Cl.** **382/107**; 367/131

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[57] **ABSTRACT**

A method is described for providing an estimate of the state of a stationary or moving contact in a three dimensional ocean. The method comprises the steps of collecting information about a location of an observer during a sequence of time, information from at least one sensor about a position of the contact relative to the observer during the time sequence, and a knowledge vector. Transforming the information into a series of three dimensional geographical grids. Examining the grids to identify hypothesized contact paths and analyzing the hypothesized contact paths to produce an estimate of the state of the contact with respect to the location of the observer. A device for providing the estimate of the state of a stationary or moving contact includes a grid stimulation block for transforming the collected information into the three dimensional geographical grids. A fusion block where grids corresponding to similar time intervals are combined or fused. A correlation block for identifying possible contact paths and for producing path likelihood vectors and an estimation block for providing the estimate of the state of the moving contact. The device further includes a controller for providing knowledge to the aforementioned blocks.

9 Claims, 4 Drawing Sheets